

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): A method for the manufacture of cross-linked polyvinylacetals, said method comprising, in any sequence:

(i) reacting in which a polymer (A1) which contains in relation to its total weight

(a) 1.0 to 99.9 wt% structural units of formula (I)



where R¹ represents hydrogen or methyl,

(b) 0 to 99.0 wt% structural units of formula (2)



wherein R² represents hydrogen or an alkyl group with 1 to 6 carbon atoms,

(c) 0 to 70.0 wt% of structural units of formula (3)



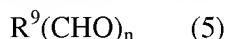
wherein R³, R⁴, R⁵ and R⁶, are in each case groups independent of each other with a molecular weight in the range from 1 to 500 g/mol, and

(d) 0.00001 to 30.0 wt% structural units of formula (4a)



wherein R^7 is a linkage, an alkylene group with 1 to 10 carbon atoms optionally substituted by one or more COOH groups, or an optionally if necessary substituted arylene group with 6 to 12 carbon atoms, and R^8 is hydrogen, COOH, an alkyl group with 1 to 10 carbon atoms and optionally substituted by one or more COOH groups, or an optionally if necessary substituted aryl group with 6 to 12 carbon atoms, ~~wherein one in any sequence~~,

(i) ~~reacts polymer (A1)~~ with at least one polyaldehyde of formula (5),



wherein R^9 represents a linkage or a group having 1 to 40 carbon atoms, and n is a whole number greater than 2; and

(ii) at least partially esterifying groups of formula (1) and formula (4a) of polymer (A1) at least partially esterified with each other [[,]].

2. (Currently Amended): The method according to Claim 1, further comprising adding characterized in that at any point in time at least one compound of formula (6) is added,



wherein R^{10} and R^{11} [[,]] are each independently hydrogen, an alkyl group with 1 to 10 carbon atoms which is optionally substituted by one or more hydroxyl, sulfonic acid groups, halogen atoms, or combinations thereof, or if necessary substituted an aryl group with 6 to 12 carbon atoms which is optionally substituted by one or more hydroxyl, sulfonic acid groups, halogen atoms, or combinations thereof, ~~in each case independent of each other~~.

3. (Currently Amended): The method according to Claim 1, wherein characterized in that a polymer (A1) with R^8 is [[=]] hydrogen is employed.

4. (Currently Amended): The method according to claim 1, wherein characterized in that a polymer (A1) is employed, in which R^7 is a linkage or an alkylene group with 1 to 4 carbon atoms.

5. (Currently Amended): A method for the manufacture of cross-linked polyvinylacetals, ~~in which said method comprising:~~

(i) reacting a polymer (A2) is cross-linked, which in relation to its total weight contains

- (a) 1.0 to 99.9 wt% structural units of formula (1)



wherein R¹ represents hydrogen or methyl,

- (b) 0 to 99.0 wt% structural units of formula (2)



wherein R² represents hydrogen or an alkyl group with 1 to 6 carbon atoms, and

- (c) 0 to 70.0 wt% of structural units of formula (3)



wherein R³, R⁴, R⁵ and R⁶, are in each case groups independent of each other with a molecular weight in the range from 1 to 500 g/mol,

~~characterized in that~~

- ~~(i) the polymer (A2) reacts with at least one compound of formula (6)~~



~~wherein R¹⁰ and R¹¹ [[.]] are each independently in each case independent of each other, are hydrogen, an alkyl group with 1 to 10 carbon atoms which is optionally substituted by one or more hydroxyl, sulfonic acid groups, halogen atoms, or combinations thereof, or an if necessary substituted aryl group with 6 to 12 carbon atoms which is optionally substituted by one or more hydroxyl, sulfonic acid groups, halogen atoms, or combinations thereof, [[.]]~~

- (ii) adding at least one compound of formula (4b) ~~is added~~



wherein R^7 is a linkage, an alkylene group with 1 to 10 carbon atoms optionally substituted by one or more COOH groups, or an optionally if necessary substituted arylene group with 6 to 12 carbon atoms and R^8 is hydrogen, COOH, an alkyl group with 1 to 10 carbon atoms and optionally substituted by one or more COOH groups, or an optionally if necessary substituted aryl group with 6 to 12 carbon atoms,

(iii) adding a polyaldehyde added of formula (5),



wherein R^9 is a linkage or a group having 1 to 40 carbon atoms and n is a whole number 0 or number greater than 2, and

(iv) at least partially esterifying groups of formula (1) and groups derived from structural units of formula (4b) at least partially esterified with each other.

6. (Currently Amended): The method according to Claim 5, wherein ~~characterized in that at least one compound of formula (4b) with R^8 is $[[=]]$ hydrogen is employed.~~

7. (Currently Amended): The method according to Claim 5, wherein ~~characterized in that at least one compound of formula (4b) is employed, in which R^7 is a linkage or an alkylene group with 1 to 4 carbon atoms.~~

8. (Currently Amended): The method according to claim 1, wherein ~~characterized in that a compound (5) with n is $[[=]]$ 2 or 3 is employed.~~

9. (Currently Amended): The method according to claim 1, wherein ~~characterized in that a compound (5) is employed in which R^9 is an aliphatic, cycloaliphatic and/or aromatic group with 1 to 12 carbon atoms.~~

10. (Currently Amended): The method according to Claim 9, wherein ~~characterized in that glutardialdehyde and/or n-nonanedial is utilized as compound (5).~~

11. (Currently Amended): The method according to claim 1, wherein ~~characterized in that n-butyraldehyde is employed as compound (6).~~

12. (Currently Amended): The method according to claim 1, wherein
~~characterized in that~~
(1) 95.00 to 99.99 parts by weight at least of one compound (6), and
(2) 0.01 to 5.00 parts by weight at least of a polyaldehyde (5) are ~~is~~ added,
wherein the parts by weight given is based on made up to 100.00 parts by weight of the total
amount of compound (5) and compound (6).

13. (Currently Amended): The method according to claim 1, wherein
~~characterized in that, the~~ esterification (ii) or (iv), ~~is if necessary~~ is carried out in presence of
at least one softener, at a temperature of bulk temperatures in the range from 80 to 280 °C.

14. (Currently Amended): The method according to Claim 13, wherein
~~characterized in that the~~ cross-linking is carried out in an extruder, kneading device or another
heatable unit.

15. (Currently Amended): A ~~The~~ cross-linked polyvinylacetal obtainable by
~~means of~~ a method in accordance with claim 1.

16. (Currently Amended): The polyvinylacetal in accordance with Claim 15,
wherein the carboxyl group content relative to the total weight of cross-linked polyacetal is
~~characterized in that less than 10.0 wt% of its total content is esterified and non-esterified in~~
~~relation to the total weight of polyvinylacetal.~~

17. (Currently Amended): The polyvinylacetal in accordance with Claim 15,
wherein said polyvinylacetal ~~characterized in that it~~ contains softeners.

18. (Currently Amended) A molding ~~Molding~~ material containing a
polyvinylacetal in accordance with claim 15.

19. (Currently Amended): A film ~~Film~~ containing a polyvinylacetal in accordance
with claim 15.

20. (Currently Amended): A laminated safety glass containing a film according to
~~The use of a film in accordance with Claim 19 for the manufacture of laminated safety~~
~~glasses.~~

21. (Previously Presented): A coating containing a polyvinylacetal in accordance with claim 15.

22. (Currently Amended): An ionically conductive intermediate layer for electrochromic systems comprising ~~The use of~~ a polyvinylacetal in accordance with claim 15 ~~for the manufacture of ionically conductive intermediate layers for electrochromic systems.~~

23. (New): A method according to claim 1, wherein

R¹ is hydrogen or methyl;

R² is hydrogen, methyl, ethyl, n-propyl, iso-propyl, n-butyl, sec-butyl, iso-butyl, tert-butyl, n-pentyl, or n-hexyl;

R³, R⁴, R⁵, and R⁶ are each independently hydrogen, an optionally branched aliphatic or cycloaliphatic group having 1 to 16 carbon atoms which is optionally substituted by one or more carboxylic amide groups and/or one or more sulphonic acid groups,

R⁷ is methylene, ethylene, n-propylene, iso-propylene, n-butylene, sec-butylene, tert-butylene, n-pentylene, or n-hexylene, in each case optionally substituted by one or more COOH groups; and

R⁸ is hydrogen, or methyl, ethyl, n-propyl, iso-propyl, n-butyl, sec-butyl, iso-butyl, tert-butyl, n-pentyl, or n-hexyl, which in each case optionally substituted by one or more COOH groups.

24. (New): A method according to claim 5, wherein

R¹ is hydrogen or methyl;

R² is hydrogen, methyl, ethyl, n-propyl, iso-propyl, n-butyl, sec-butyl, iso-butyl, tert-butyl, n-pentyl, or n-hexyl;

R³, R⁴, R⁵, and R⁶ are each independently hydrogen, an optionally branched aliphatic or cycloaliphatic group having 1 to 16 carbon atoms which is optionally substituted by one or more carboxylic amide groups and/or one or more sulphonic acid groups,

R⁷ is methylene, ethylene, n-propylene, iso-propylene, n-butylene, sec-butylene, tert-butylene, n-pentylene, or n-hexylene, in each case optionally substituted by one or more COOH groups; and

R⁸ is hydrogen, or methyl, ethyl, n-propyl, iso-propyl, n-butyl, sec-butyl, iso-butyl, tert-butyl, n-pentyl, or n-hexyl, which in each case is optionally substituted by one or more COOH groups.

25. (New): A method according to claim 23, wherein R⁹ is an aliphatic, cycloaliphatic and/or aromatic group having up to 20 carbon atoms, and n is a whole number from 2 to 10.

26. (New): A method according to claim 24, wherein R⁹ is an aliphatic, cycloaliphatic and/or aromatic group having up to 20 carbon atoms, and n is a whole number from 2 to 10.

27. (New): A method according to claim 1, wherein the compound of formula (5) is glyoxyl, propanedial, n-butanedial, glutardialdehyde, n-hexanedial, n-heptanedial, n-octanedial, n-nonanedial, n-decanedial, n-undecanedial, n-dodecanedial, 4,4'-ethylenedioxydibenzaldehyde or 2-hydrtoxyhexanedial.

28. (New): A method according to claim 2, wherein the compound of formula (6) is formaldehyde, acetaldehyde, propionaldehyde, n-butyraldehyde, iso-butyraldehyde, iso-butyraldehyde, 2-ethoxybutyraldehyde, paraldehyde, 1,3,5-trioxane, capronaldehyde, 2-ethylhexanal, pelargonaldehyde, 3,5,5-trimethylhexanal, 2-formylbenzosulfonic acid, acetone, ethylmethylketone, butylethylketone or ethylhexylketone.

29. (New): A method according to claim 1, wherein
the compound of formula (5) is glyoxyl, propanedial, n-butanedial, glutardialdehyde, n-hexanedial, n-heptanedial, n-octanedial, n-nonanedial, n-decanedial, n-undecanedial, n-dodecanedial, 4,4'-ethylenedioxydibenzaldehyde or 2-hydrtoxyhexanedial, and
the compound of formula (6) is formaldehyde, acetaldehyde, propionaldehyde, n-butyraldehyde, iso-butyraldehyde, iso-butyraldehyde, 2-ethoxybutyraldehyde, paraldehyde, 1,3,5-trioxane, capronaldehyde, 2-ethylhexanal, pelargonaldehyde, 3,5,5-trimethylhexanal, 2-formylbenzosulfonic acid, acetone, ethylmethylketone, butylethylketone or ethylhexylketone.

30. (New): A method according to claim 1, wherein the total number of structural units of formula (2) is from 0.1 to 40 mol%, relative to the total number of structural units of the formula (1) and (2).

31. (New): A method according to claim 29, wherein the total number of structural units of formula (2) is from 0.5 to 25.0 mol%, relative to the total number of structural units of the formula (1) and (2).

32. (New): A method according to claim 1, wherein polymer A1 contains, relative to the total weight, > 50.0 wt%, of structural units of formula (1) and/or (2).

33. (New): A method according to claim 5, wherein polymer A2 contains, relative to the total weight, > 50.0 wt%, of structural units of formula (1) and/or (2).

34. (New): A method according to claim 1, wherein polymer A1 has a viscosity in the range from 1 to 70 mPas.

35. (New): A method according to claim 5, wherein polymer A2 has a viscosity in the range from 1 to 70 mPas.

36. (New): A polyvinylacetal in accordance with Claim 17, wherein said softeners are selected from diesters of di-, tri- and tetraethyleneglycols with aliphatic monocarboxylic acids, adipic acid-dialkyl ester, and dibenzoates of alkylene- and polyalkylene glycols.

37. (New): A film according to claim 19, wherein said film further contains one or more additives selected from oxidation stabilizers, UV stabilizers, dyestuffs, filler materials, pigments and/or anti-adhesion agents.

38. (New): A coating according to claim 21, wherein said coating further contains one or more additives selected from polymer resins, softeners, pigments, filler materials, stabilizers, adhesion promoters, rheological aids, additives that influence pH, and additives that

catalyze chemical reactions between the polyvinylacetals and other polymer resins.